On-farm interventions to reduce pathogen contamination

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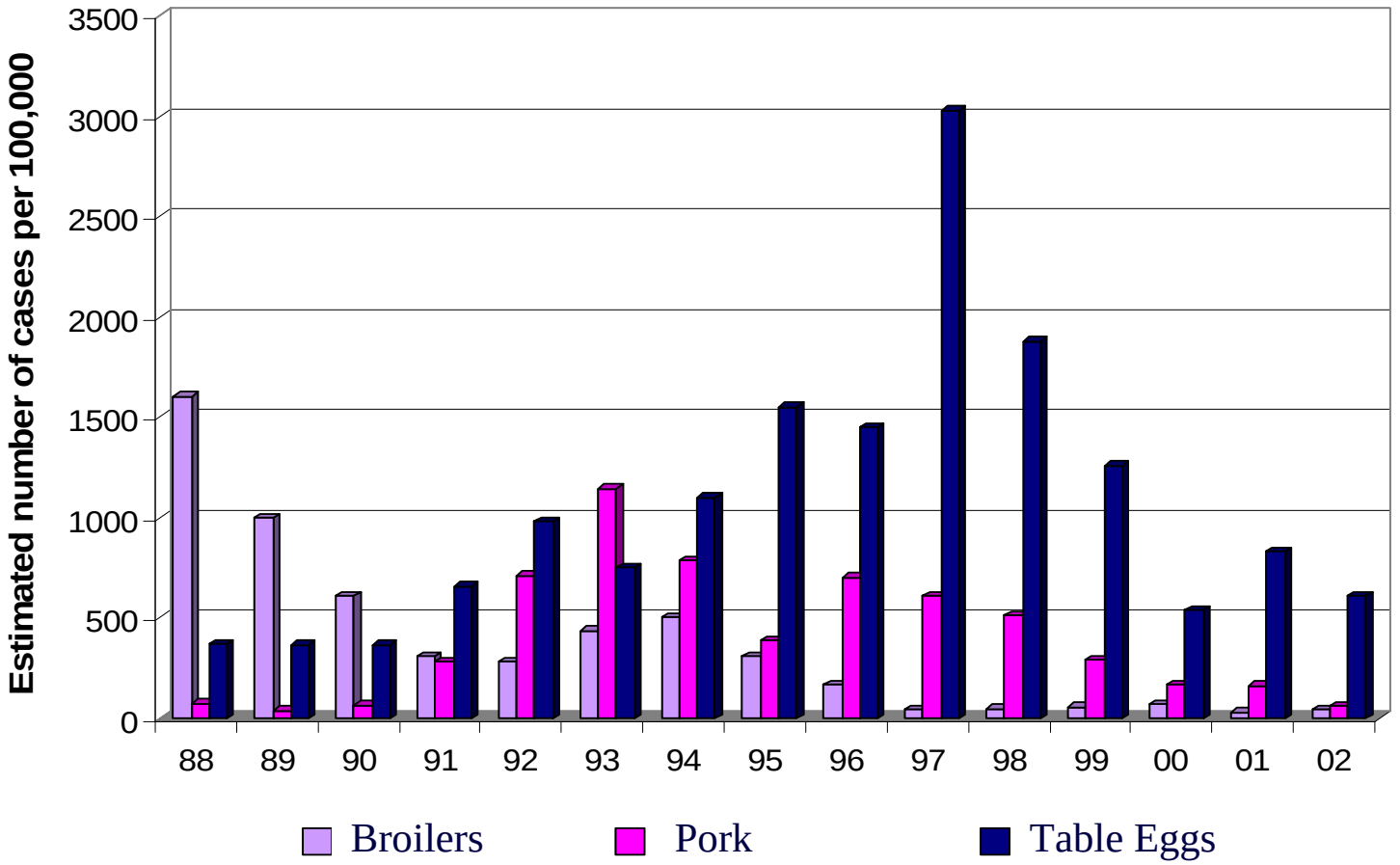
Estimated major sources of human salmonellosis in Denmark



What do we mean by "costs of food safety" on the farm

- Direct costs of intervention procedures:
  - Vaccines, competitive exclusion, capital costs of facilities improvements.
- Costs of monitoring program to identify problem and to measure improvement.
- Costs savings from "food safety" interventions
- Costs of not doing interventions or treatments; ie. Subtherapeutic antibiotics or coccidiastats.
- Costs savings; ie. Recalls prevented, litigation, bad publicity etc.

How do we pay for on-farm food safety programs

- Management commitment.
- Integrated companies vs. business units.
- Government or industry group (check-off) funding vs. individual company or business unit.

Potential Chicken Pre-harvest Interventions

- Breeder Farm
  - Eradication program: ?
  - Vaccination program: $.03 - $.16/bird
  - Biosecurity: ?
  - House clean-out / disinfection. ?
- Hatchery
  - Setter chemical disinfection: < $.01
  - Air movement control: ?
  - Cleaning and sanitization: ?

Potential Pre-harvest Interventions

- Broiler grow-out
  - Competitive Exclusion: $.01 - $.02/bird
  - Feed Control: ?
  - Litter amendments: $300/house/grow-out
  - Nipple drinkers: $5000/house
  - Chlorinators: $2000/house
  - Biosecurity: ?

Potential Pre-harvest Interventions

- *S.* Enteritidis control in egg layers
  - Egg Quality Assurance Program
    - Vaccination: $.13/bird
    - Interactive pest management program: ?
  - Active Shedder Program
    - Clean chicks
    - Vaccination: $.13/chick
    - Divert eggs to breaking plant: $.10/dozen
    - Takes about 3-4 cycles to go negative

Swedish control program for *Salmonella* in broilers

- Very simple program for a small immature industry
  - No *Salmonella* in breeder flocks/chicks
  - Eradicate all positive breeders
  - Eliminate *Salmonella* from all feed
  - Have active surveillance program to monitor *Salmonella* status at all times
  - Have active government input to process
- **NO** *Salmonella* positive chicken allowed to be sold.

Danish control program for *Salmonella* in broilers

- Similar (but different) program to Sweden
  - Control in breeder flocks
  - Control in feed
  - Active surveillance program
- Salmonella positive chickens **are** allowed to be sold

Best Management Practices for Control of Salmonella in U.S. Poultry Industry

- Breeders:
  - Salmonella-free chicks
  - Competitive exclusion treatments
  - Vaccination program
  - Biosecurity
    - Rodent and insect control program
    - Footbaths / movement of workers

Best Management Practices for Control of Salmonella in U.S. Poultry Industry

- Feed
  - Attempt to control quality of ingredients
  - Sufficient time in conditioner to give time/temperature/moisture for Salmonella kill
  - Control post pelleting (processing) recontamination. Pay particular attention to cooling area

Best Management Practices for Control of Salmonella in U.S. Poultry Industry

- Hatchery
  - Enforce cleaning/sanitation program
  - Control air movement in hatchery
  - Institute chemical disinfection program in hatch cabinets during hatch period
  - Do not reuse tray liners

Best Management Practices for Control of Salmonella in U.S. Poultry Industry

- Grow-out
  - Salmonella-free chicks
  - Competitive exclusion treatments
  - Moisture control (no leaking nipple drinkers)
  - Proper working ventilation system (reduce stress on birds – litter amendments if necessary)
  - Rodent and insect control program
  - Limit movement of workers / visitors

Best Management Practices for Control of Salmonella in U.S. Poultry Industry

- Transport
  - Insist on proper feed and water withdrawyl time
  - Clean transport coops [more work needs to be done]
  - To extent possible limit time in transport cages

Conclusions:

- Experience has shown that the best way to control pathogens in food systems is to control the pathogens on the farm and prevent them from ever entering the processing plant.
- Costs can be direct or indirect and in some instances actually will save money in the cost of production of animals. Costs of these control programs can be highly variable.

Conclusions:

- An active surveillance program is needed to know what is going on and to be able to intelligently analyze new intervention strategies.
- Successful control programs are not easy (or cheap) and must be supported from top management down.

- Food Safety starts on the farm and these on-farm efforts will greatly influence everything else that must be done during the processing and distribution of foods.